

ON THE INTERSCAPULO-THORACIC AMPUTATION WITH REPORT OF A CASE.

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THE PATIENT, native of the United States, æt. 47 years, photographer by occupation and latterly farmer, in the month of November, 1887, was thrown from a carriage striking on his left shoulder. The attending surgeon said he had a fracture and dislocation. Has never been able to use the arm well since the accident and has suffered considerable pain. The shoulder has been gradually enlarging.

About April 1, 1889, the arm suddenly gave out; since which time he has practically lost the use of it and has suffered great pain.

Family and personal history good. Patient was admitted to the Brooklyn Hospital, April 26, 1889. Examination shows general health to be good. Strength somewhat reduced from suffering.

Left shoulder is much enlarged, but not very tender to manipulation. Motion of shoulder joint very limited. Diagnosis osteosarcoma. Operation requested.

April 29 the operation was performed. The subclavian artery was first tied in the third part of its course. This was a matter of some difficulty on account of the encroachment of the tumor, the artery being pushed down and in. The scapula and outer half of the clavicle were removed with the upper extremity. Drainage was established at the lower angle of the scapula. All antiseptic precautions were taken. Patient suffered from severe shock but rallied well.

The amount of hæmorrhage was not very considerable. The only artery tied was the subclavian. On the third day the drainage tube was removed from the lowest part of the wound where the lower angle of the scapula had been. About two drachms of sanious aseptic fluid followed. This was the remains of the douching of the extensive ex-

posed surface at the time of the operation and was not the product of any inflammatory process. The entire wound healed by first intention except one part of the incision along the line of the clavicle about $\frac{2}{3}$ of an inch in length. This granulated. Patient's temperature hardly went above normal. There was no discharge of pus or blood. Patient was anxious to sit up within a week of the operation. The treatment of the original injury must have been skillful as the line of the humerus proved to be good and the head of the bone was in place but of course very much enlarged by the morbid growth.

A small portion of the wound at the lower angle also granulated but no pus formed from the large surface exposed by the operation.

Since the operation the patient has gained in general health and strength. He is now heavier and in better condition than he has been for many years.

On examination eight months after the operation, the line of incision shows the two small points that healed by granulation, one at the middle of the clavicle and the other at the lower angle of the incision.

There is a point of great tenderness near the lower angle of the incision. By gentle palpation the bulbous extremities of some of the brachial plexus of nerves can be felt. I have advised him to have these nerve trunks resected. It will be an operative procedure of no special gravity and will undoubtedly relieve the remaining tenderness about the site of operation.

There is not the slightest indication of any return of the disease at any point.

Report of Pathological Examination of the Tumor.

Analysis of the tumor and arm with the scapula and outer third of the clavicle reveals the following facts:

Length of entire arm from its lower extremity to upper edge of tumor $12\frac{1}{2}$ inches.

Distance from lower border to upper border of tumor, 4 inches.

Greatest thickness, $3\frac{1}{2}$ inches.

Least thickness, 3 inches.

The mass is irregularly spherical, fairly firm in consistence, and involves the head, neck and upper portion of shaft of humerus, as well as the muscular and superficial and tegumentary structures around the bone.

There is rarefying osteitis involving the internal portion of the shaft of the humerus extending its entire length to the condyles—the bone is thinner than normal, and roughened on its inner surface. The shaft at

its upper extremity is honey-combed with the material composing the tumor tissue.

The neoplasm is in spots very soft, in other places hard and firm. The central portion contains considerable bone, and the softer portions contain same material in small spicules.

Microscopic examination of the tumor reveals it to be a typical osteosarcoma, with the usual vascular supply. There are many multinuclear giant cells surrounded with smaller large round cells. There is a small amount of stroma intimately associated with the individual cell, and everywhere imbedded in mass of cells are bone spicules containing typical lacunæ and canaliculi. The center of the mass contains considerable bone substance which is honey combed throughout, and is probably the remains of the head of the humerus.

The head of the scapula is excavated by a rarifying osteitis. There is a round opening from the surface of the eroded glenoid cavity extending towards the neck for half an inch and having a diameter half an inch. There seems to be some shortening of the neck bone; and the space just described contains tumor material with intermixed small spicules of bone.

Ashhurst has tabulated 51 cases of this operation, which show a mortality of about 25%. Dr. Stephen Rogers, of New York, in the January number of the *New York Medical Journal*, 1869, publishes a table of operations for partial or complete excision of the scapula. There are 64 cases. Of these, 15 included removal of the arm and part, or all of the clavicle. The mortality in these cases was 20%. Many other cases have been reported singly and, doubtless, many not reported at all. The operation seems to be sufficiently rare to warrant the reporting of every case, whatever the result, for the purpose of assisting in statistics. The most complete table that I have knowledge of is published by Berger, of Paris, in a monograph on this subject. He reports 51 cases, the same number as Ashhurst, but analysis shows that he mentions only 25 of the same cases. Therefore, he reports 26 cases not mentioned by Ashhurst.

His conclusions, from a critical review of the history of each case, point to a death-rate rather less than mentioned by

Ashhurst' *i. e.*, about 20%, instead of 25%. A resume of some of his facts and conclusions may not prove uninteresting:

He first claims that the operation should be named. The text books at present speak of amputation as any amputation above the shoulder joint. Berger suggests that it be called amputation of the upper extremity next to the trunk, or "The Interscapulo-thoracic Amputation."

It seems that this name would designate the operation better than the more general term now used.

The first case on record seems to have occurred in 1737 and is mentioned by Cherelden.

An English naval surgeon operated in 1808, and next Crosby in 1836. Of the 51 cases of Berger, 38 were rendered necessary by morbid growths, principally osteo-sarcoma. Of this 38, 22 had the whole operation done at once, while in 16 cases there were two or more operations. Of the 22 mentioned, 17 made a recovery more or less durable, but 5 died from causes attributable to the operation, from a few minutes to 6 days after the operation. One of this 5 may be fairly excluded for the purpose of statistics, as the disease proved to be so extensive that the thoracic cavity was opened during the operation. It was not a case that can be considered a test of the operation. The patient survived but a very short time.

Of the 16 cases where two or more operations were performed, 3 died at times varying from the same day to eleventh day and from causes fairly to be attributed to the surgical interference.

This makes 7 deaths in 37 cases, or practically 19%.

The remaining 13 cases of the 51 in the table show a mortality of 4, or nearly 31%, the combined mortality of the two classes of cases being 22%. The mortality in the second class of cases is influenced largely by other causes than the operation, *i. e.*, by shock, injury and hæmorrhage.

Ashhurst gives a mortality rate of 25.5% in his 51 cases, while Dr. Stephen Rogers, of New York, in his table published in January, 1869, in the *New York Medical Journal*, mentions 15 cases, with a mortality of 20%. Neither of these 2 gentlemen separates the operations done for disease from those performed

for injury. Berger gives a brief history of each of his cases and makes the division above referred to. His conclusions may be considered the most reliable. It would seem, therefore, that the mortality thus far in the history of this operation is about 20% in those cases where the interference is on account of diseased tissue, and 30% or over where the operation is done for recent injury.

Antiseptic surgery will, doubtless, lower this percentage a good deal for, of the 11 deaths noted by Berger, no less than 4 were due to sepsis, 2 to shock, 2 to hæmorrhage, 2 to exhaustion and the cause of one is not known.